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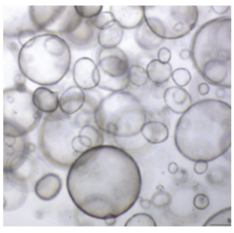
Corning Matrigel establishes Patient-derived Organoids â?? a guide for precision oncology

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We are living in an era where cancer remains the leading cause of death worldwide despite advances in early detection, screening and treatment. Due to disease heterogeneity, patients exhibit variable response to standard treatments like chemo/radiation/immunotherapy. This is because cancer emerges and progresses with underlying genetic causes which differs from one patient to another.



Pancreatic organoids - Image courtesy of Dr. Hervé Tiriac, University of California, San Diego



Patient-derived Organoids (PDO), also called as tumoroids, are 3D in-vitro, mini organ analogs derived from individual patients. The cancer cells from patients are embedded into a matrix for 3D culture in-vitro, which then grow into tumoroids recapitulating the pivotal features of original cancer tissues including histological complexity, maintaining genetic heterogeneity and thus, serves as predictors for individualized treatment of cancer.

Choosing the right labware and integrating the appropriate ECM (Extra-Cellular Matrix) is the key to generate a successful batch of PDOs. As with any preclinical research involving human samples, it is critical for the scientific data to be consistent and reproducible from time to time.

Dr Hervé Tiriac, University of California, has dedicated his career to fine-tuning the protocols for establishing pancreatic organoids, currently building on his research at the Cold Spring laboratories states “If a patient's organoids are sensitive to therapies in vitro, then the patient tends to be sensitive to the same drug given in the clinic. I hope to continue to use organoids to identify and differentiate drug-sensitive and drug-resistant patients and determine biomarkers for these traits”. Tiriac highlights how convenient and dependable are Corning Matrigel and HYPERFlask in PDO establishment.

Corning® Matrigel® matrix has been a best friend for the scientists across the globe for decades as an integral component of every stage of organoid development. Corning Matrigel is a solubilized basement membrane extract secreted by Engelbreth-Holm-Swarm (EHS) mouse sarcoma cells which includes ECM proteins. Today, our Matrigel is being used in several cancer research studies to productively grow PDOs from various cancer cells (colorectal, breast, ovary, brain, pancreas, gastric, prostate) for studying and assessing their drug response, structuring cancer immunotherapy strategies, pharmaco-phenotyping and to explore other anti-cancer treatment options.

PDOs are described as the real-time platform to explore the feasibility of tailored treatment for refractory metastasized tumors. It is crucial that the PDOs maintain the original pathology and genetic features of the patient and display a similar response to treatment with progression. Cultivating PDOs using Corning’s most trusted product, the Matrigel matrix, helps researchers to overcome one of the major challenges faced in precision model platforms.

Let’s join hands and team up to build a cancer-free world.